Psychotherapy and Psychosomatics

Received: January 23, 2019
Accepted after revision: February 24, 2019
Published online: April 16, 2019

Psychother Psychosom
DOI: 10.1159/000499118

Sudden Gains in Cognitive Behavioural Therapy and Focal Psychodynamic Therapy for Anorexia Nervosa: Findings from the ANTOP Study

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Sudden gains (SG) are sudden symptom improvements that occur between consecutive psychotherapy sessions [1]. Across different mental disorders, approximately 50% of patients experience SG [2]. SG are related to greater symptom reduction at the end of treatment and follow-up, particularly in cognitive behavioural therapy (CBT) [2, 3]. Only one previous study examined SG in anorexia nervosa (AN) [4]: of 89 patients who received the Maudsley model of AN treatment or specialist supportive clinical management, 62% experienced SG. The number of SG was positively associated with body mass index (BMI) at the end of treatment and follow-up. The present study extends previous research by examining a larger sample of AN patients (n = 144) and two different treatment approaches, namely CBT and psychodynamic therapy.

Data were obtained from a randomised controlled trial comparing enhanced cognitive behaviour therapy (CBT-E) and focal psychodynamic therapy (FPT) against optimised treatment-as-usual (TAU-O) in adult outpatients with full-syndrome/subthreshold AN (for details see [5]). Session level BMI data of 144 patients were available. Written informed consent was obtained from each participant. Independent research ethics committees approved the study.

BMI (kg/m^2) at the end of treatment and at the 1-year follow-up served as primary outcome. Secondary outcomes were self-reported (Eating Disorders Inventory-2 [EDI-2] [6]) and clinician-rated (Structured Interview for Anorexic and Bulimic Syndromes [SIAB-Ex] [7]) AN symptoms. Patients were weighed prior to each session. Following previous SG research in general [1] and in AN in particular [4], SG were measured in terms of BMI change between two consecutive sessions (N = pregain session, N+1 = postgain session). Meeting the first SG criterion (absolute magnitude) required an increase of 0.1805 kg/m^2 between N and N+1 (based on NICE guidelines' recommendation of an average weight gain of 0.5 kg/week for adult AN outpatients [8], and the mean height of our sample). We did not apply the second SG criterion (relative magnitude), as it has been criticized to have minimal impact on SG selection [9]. To fulfil the third SG criterion (stability), the mean BMI at sessions N–2, N–1, and N had to be significantly lower than the mean BMI at sessions N+1, N+2, and N+3, as indicated by an independent samples t test. Following Cartwright et al. [4], we added a suddenness criterion: the rate of BMI increase between sessions N and N+1 had to be ≥1.5 times the rate of BMI change between sessions N–1 and N.

One hundred patients (69.5%) showed at least one SG (average magnitude: 0.47 kg/m^2). Patients with SG did not differ from those without SG regarding age, pre-treatment BMI, and SIAB scores (all $p > 0.314$) but had lower pre-treatment EDI-2 scores (p = 0.035). CBT-E and FPT neither differed regarding the number of patients with SG (CBT-E: 69%; FPT: 70%), $\chi^2(1) = 0.63$, p = 0.802, nor regarding the average number of SG per patient, $t(142) = 0.07$, p = 0.949. For further descriptive analyses of SG and reversals, see online supplementary material (www.karger.com/doi/10.1159/000/499118).

A mixed ANOVA was conducted with BMI as dependent variable and these independent variables: time (within-subject: pre-treatment, end of treatment), treatment type (between-subject: CBT-E, FPT), SG (between-subject: present, absent). We found a significant main effect of time, $F(1,123) = 17.32$, $p < 0.001$, indicating that patients gained weight, irrespective of treatment type and presence/absence of SG. Further, we found a main effect of SG, $F(1,23) = 10.03$, $p = 0.002$. Patients with SG had a higher BMI than those without SG (Table 1). Importantly, this effect was not significant at pre-treatment, $t(142) = 0.06$, p = 0.950, but only at the

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Table 1. Demographic and clinical characteristics of the sample

	Sudden gain (n = 100)	No sudden gain (n = 44)
Mean age, years	27.23±7.91	27.91±7.64
AN restricting subtype	48 (48)	21 (48)
BMI at pre-treatment	16.69±1.00	16.68±0.96
BMI at the end of treatment	17.88±1.65	16.74±1.59
BMI at the 1-year follow-up	18.53±1.88	17.39±2.01
SIAB-Ex scores at pre-treatment	1.02±0.33	1.09±0.35
SIAB-Ex scores at the end of treatment	0.74±0.39	0.95±0.43
SIAB-Ex scores at the 1-year follow-up	0.67±0.42	0.81±0.43
EDI-2 scores at pre-treatment	257.17±49.91	277.53±59.38
EDI-2 scores at the end of treatment	239.84±56.10	266.13±51.09
EDI-2 scores at the 1-year follow-up	223.23±53.01	253.14±58.93

Values are expressed as mean ± SD or n (%). AN, anorexia nervosa; BMI, body mass index; SIAB-Ex, Structured Interview for Anorexic and Bulimic Syndromes; EDI-2, Eating Disorders Inventory-2.

end of treatment, $t(125) = 3.53$, $p = 0.001$. Finally, we found a significant time*SG interaction effect, $F(1,123) = 13.76$, $p < 0.001$. Patients with SG had greater BMI increases ($mean_{BMI_change} = 1.16$) than those without SG ($mean_{BMI_change} = 0.11$; Hedge's $g = 1.14$). The three-way interaction effect (time*SG*treatment type) was not significant. Thus, the presence of a SG resulted in a greater BMI increase, irrespective of treatment type. Similarly, for BMI at follow-up, we found significant main effects of time, $F(1,111) = 44.94$, $p < .001$, and SG, $F(1,111) = 5.85$, $p = 0.017$, and a significant time*SG interaction effect, $F(1,111) = 9.06$, $p = 0.003$. Again, the main effect of SG stemmed only from differences at follow-up, $t(113) = 2.94$, $p = 0.004$, and patients with SG had greater BMI increases ($mean_{BMI_change} = 1.81$) than those without SG ($mean_{BMI_change} = 0.66$; Hedge's $g = 1.14$).

For changes in SIAB-Ex scores from pre-treatment to the end of treatment, there was a significant main effect of time, $F(1,125) = 34.78$, $p < 0.001$, and a trend for a main effect of SG, $F(1,125) = 3.56$, $p = 0.06$, again, stemming from differences at the end of treatment, $t(127) = 2.61$, $p = 0.010$. Again, we found a significant time*SG interaction effect, $F(1,125) = 6.15$, $p = 0.014$. Patients with SG showed greater improvement ($mean_{SIAB_change} = 0.30$) than those without SG ($mean_{SIAB_change} = 0.13$; Hedge's $g = 0.42$). There were no significant time*SG interaction effects, however, for changes in SIAB-Ex from pre-treatment to follow-up (Hedge's $g = 0.24$) and EDI-2 from pre-treatment to the end of treatment (Hedge's $g = 0.11$) and follow-up (Hedge's $g = 0.18$).

Consistent with previous research [3, 10], patients with a SG during the first third of treatment (n = 51) showed greater BMI increases from pre-treatment to the end of treatment, $F(1,89) = 9.13$, $p = 0.003$, and (as a trend) from pre-treatment to follow-up, $F(1,77) = 3.81$, $p = 0.055$, than patients who experienced a SG later in treatment ($n = 40$). We found similar effects for change in SIAB-Ex scores from pre-treatment to the end of treatment, $F(1,89) = 7.57$, $p = 0.007$, and from pre-treatment to follow-up, $F(1,72) = 8.65$, $p = 0.004$. There was no such effect for change in EDI-2 scores from pre-treatment to the end of treatment, $F(1,89) = 0.44$, $p = 0.509$, but (as a trend) for change in EDI-2 scores from pre-treatment to follow-up, $F(1,75) = 3.55$, $p = 0.063$.

This is the first study to examine SG in CBT and psychodynamic therapy for AN. We found SG in 65.9% of the sample. Congruent with previous research, SG had beneficial effects on short-term and long-term treatment outcome. Furthermore, treatment outcome was better if SG were experienced early in treatment, mirroring previous research in depression [10]. In contrast to a recent meta-analysis on SG in depression and anxiety disorders, we found that SG in psychodynamic therapy were not scarcer than in CBT [2].

The study has limitations. Session-to-session changes in non-specific factors (e.g., self-esteem) and clinical parameters other than BMI were not measured, limiting the options of defining SG and of analysing factors that contribute to SG. Future studies may thus involve additional symptom and process measures. Nonetheless, our findings suggest that SG are a common and important phenomenon in CBT-E and psychodynamic therapy for AN. Monitoring trajectories of weight change in AN could alert therapists to adapt therapeutic strategies in light of the presence/absence of SG. Further research is necessary to uncover mechanisms that are driving SG in AN.

Disclosure Statement

A.D. received speaker honorarium from Novartis Pharma. The other authors have no conflicts of interest to declare.

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